Project XL Summary Sheet
Buncombe County Landfill

Summary of the project – The new Buncombe County Solid Waste Management Facility was opened in September 1997. The 550-acre Buncombe County Solid Waste Management Facility (BCSWMF) is located in the western part of North Carolina. It is owned and operated by the Buncombe County General Services Department. The facility serves only Buncombe County and its six municipalities: Asheville, Biltmore Forest, Black Mountain, Montreat, Woodfin, and Weaverville. This facility is among the ten largest publicly-owned Municipal Solid Waste landfills in the state, accepting approximately 100,000 tons per year from the area's 200,000 residents. The current population of Buncombe County is growing at about 2% per year. The landfill currently receives about 150,000 tons per year of municipal solid waste and construction and demolition wastes.

Cells 1 and 2 of the Subtitle D landfill portion of the site were constructed as part of the initial phase of construction of the 10 cell site. Cells 1 and 2, which cover approximately 13 acres, were constructed with the standard Subtitle D composite liner system. North Carolina did not implement alternative liner rules until 1998, thus the standard composite liner had to be used. In 1999, the County completed the construction of Cell 3, and 8-acre cell designed with an alternative liner system consisting of 18 inches of 10^{-5}cm/sec soil overlain by a geosynthetic clay liner (GCL) and a 60-mil HDPE synthetic liner. Groundwater modeling results showed that the leakage rate through the standard composite liner is 1.59 gal/day while through the alternative liner it is 1.08 gal/day. Thus, the alternative liner affords almost 50 percent more protection to the underlying aquifer than the standard composite liner.

Over the past two years, Buncombe County has been researching a new method for operating sanitary landfills – leachate recirculation and gas collection. The County describes five components in their XL proposal: 1) combined leachate recirculation and gas collection; 2) horizontal trenches; 3) pressure injection system; 4) active gas collection; and, 5) alternative liner system. Buncombe County proposes that this pilot will generate results that could be transferable to other facilities and provide a sound scientific basis for modifying existing EPA regulations to allow and promote the use of alternative liner systems in municipal solid waste landfills utilizing leachate recirculation.

Superior environmental performance – The County believes that the leachate recirculation/gas recovery landfill approach would enable superior performance. When implemented, this project will provide superior environmental performance in a number of ways: 1) Acceleration of waste decomposition which should enhance groundwater protection; 2) Early compliance with Clean Air Act requirements for municipal solid waste landfills through installation of a gas collection and control systems; 3) Reduction in emissions as a result of producing a more efficient landfill gas; 4) Reduction of potential risk to workers and the community from transport of collected leachate to the POTW via tanker trucks; 5) Improved leachate quality and, ultimately, discharge water quality to the receiving stream; 6) Reinvestment of cost savings in pilot projects to enhance integrated solid waste management practices in Buncombe County; 7) Additional waste capacity and longer life of existing landfill cells, reducing the need for new landfill sites; 8) Evaluation of the horizontal trench design for leachate recirculation/gas recovery landfills by providing valuable large-scale operational data; and, 9)

Identification and quantification of performance advantages or limitations of the process. Superior Environmental Performance will be measured by attempting to quantify the benefits against the baseline for this project.

Regulatory flexibility – EPA's RCRA Subtitle D regulations (40 CFR Part 258) currently allow for leachate derived from an municipal solid waste landfill (MSWLF) unit to be placed back into the landfill if the MSWLF unit is designed with the standard composite liner (i.e., 2 feet of 10^{-7} cm/sec permeability soil and a 60-mil HDPE synthetic liner) and leachate collection system specified in the regulations. Though the Subtitle D regulations provide a mechanism whereby alternative liner systems may be accepted by approved State programs (provided that they can be demonstrated at least as protective as the standard composite liner), an EPA policy memorandum documents that it is EPA's interpretation of the regulations that leachate can only be recirculated over landfill units constructed with the standard composite liner design.

The regulatory flexibility sought under this proposal would be to allow Buncombe County to recirculate leachate over MSWLF units constructed with an alternative liner system.

Stakeholder involvement – The County proposes involving the State of North Carolina Department of Environment and Natural Resources, who will be responsible for permitting the project, the County's Environmental Affairs Board which is comprised of County citizens, and a group of citizens that reside in the neighborhood of the landfill.

Approaches to be Tested –

- Will the use of an alternate liner provide a superior level of protection to the standard liner as required in current regulations?
- Will the leachate recirculation result in a more effective approach than the conventional approach?
- Can the leachate recirculation approach create fewer fugitive emissions?
- Will the alternative approach and its safeguards, as proposed by Buncombe County, provide a superior performance in preventing leachate contamination ?

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